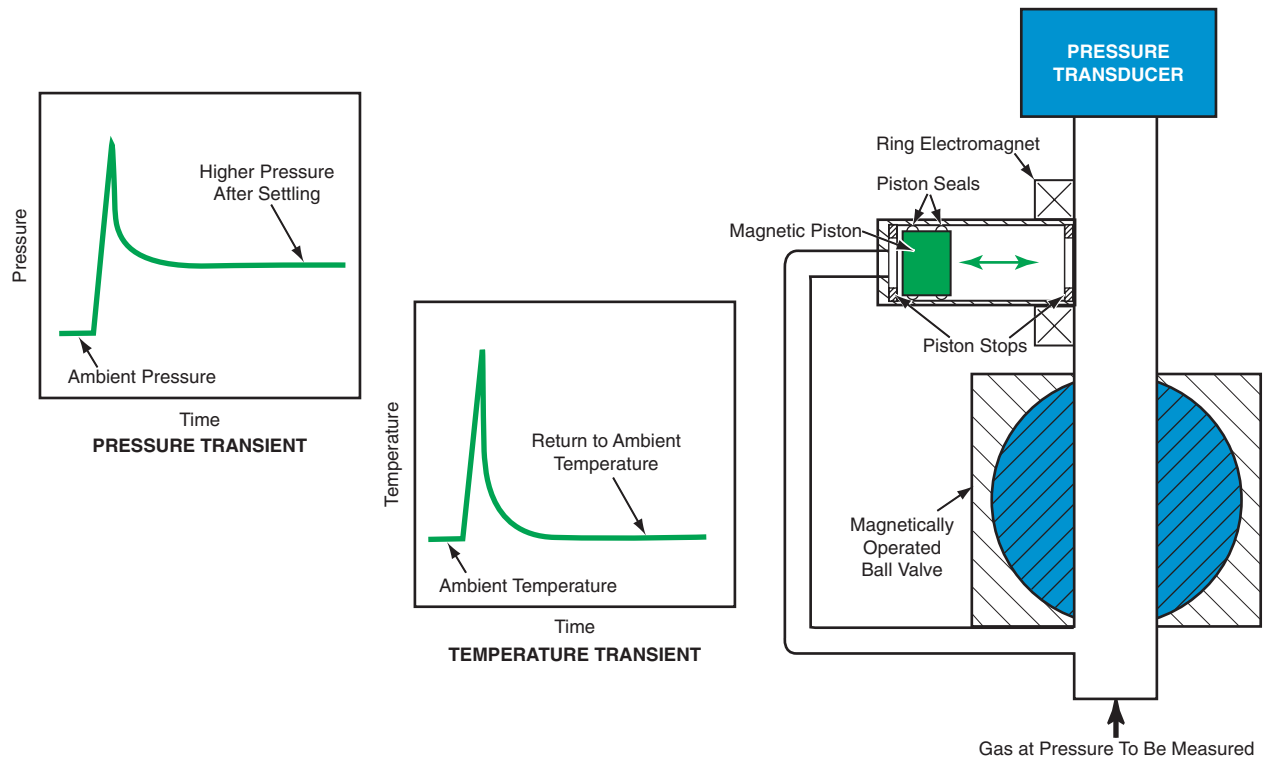


Remote Pressure Transducer Health Check

The National Aeronautics and Space Administration (NASA) seeks to license the Remote Pressure Transducer Health Check technology. This technology is a device and a process for remotely checking various parameters of a pressure transducer to determine if it requires calibration. When failures occur in pressure transducers in remote locations, a great deal of effort and expense is expended to determine if there truly is a problem or whether the measurement involved with the particular parameter failed. To account for the potential problems in remote locations, wide margins of safety are used to compensate for the degradation of the measurement devices installed over time. This leads to a need for additional resources, increased technical support, and the added costs associated with these needs. In an emergency situation, the need to determine if there is a parameter or measurement failure increases the possibility of an erroneous decision. This technology is designed to accurately determine the health of the measurement device by an in situ check of the sensor's major operating parameters.




Potential Commercial Uses

- Pressure transducer manufacturing
- End users of pressure transducers
- Oil company pipeline maintenance
- Water company pipeline maintenance

Benefits

- Permits remote measurements of the sensitivity, linearity, hysteresis, temperature, thermodynamic pressure, and repeatability of a pressure transducer.
- Decreases redundant measurements through remote signal indicating calibration.

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- Decreases the amount of time and possible errors during a system failures.
 - Extends the life of devices installed in an operating environment by reducing the number of times a pressure transducer requires removal for laboratory calibration.

The Technology

In the health check procedure, a fixed change in pressure above ambient pressure is measured and a fixed change in pressure below ambient pressure is measured. This is performed by first sealing an enclosed volume around the transducer with a valve. A piston inside the sealed volume is then driven forward, compressing the enclosed gas, thereby increasing the pressure. A fixed pressure below ambient pressure is obtained by opening the valve, driving the piston forward, sealing the valve, and then retracting the piston. The output of the pressure transducer is recorded for both the over pressuring and the under pressuring. By comparing the data with data taken during a preoperative calibration, the health of the transducer is determined from the linearity, hysteresis, and the repeatability of its output. The addition of an adiabatic decompression/expansion phase to the health check allows the comparison of the thermometer (which many pressure transducers already have built in) and the manometer through the thermodynamic equation of state for the gas. This comparison serves as an additional health check not just at two pressure points but also at a series of many pressures and temperatures. This would also determine if there exists a constant offset error in the manometer.

Options for Commercialization

NASA seeks qualified companies to commercialize the Remote Pressure Transducer Health Check technology. This and other technologies are made available by the KSC Technology Commercialization Office through a variety of licensing and partnering agreements. These include patent and copyright licenses, cooperative agreements, and reimbursable and nonreimbursable Space Act Agreements.

Contact

If your company is interested in the Remote Pressure Transducer Health Check technology or if you desire additional information, please reference Case Number KSC-12139 and contact:

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Commercialization Checklist

- ✓ Patent pending
 - U.S. Patent
 - Copyrighted
- ✓ Available for licensing
 - Available for no-cost transfer
 - Seeking industry partner for furthercodevelopment

KSC-12139/TOP10-55/01-03/2.3